near the Grand Banks numbered 8 more than usual; between the fifty-fifth and sixty-fifth meridians, 8 more than usual; and west of the sixty-fifth meridian, 5 more than usual.

OCEAN ICE FOR MAY.

The limits of the region within which icebergs or field ice were reported for May, 1895, are shown on Chart I by crosses. The southernmost ice reported, a large berg observed on the 6th in the position given, was about one-quarter of a degree farther south than the average southern limit of ice for May, and the easternmost ice reported, 4 large bergs, noted on the 6th, in the position given in the table, was nearly three-quarters of a degree east of the average eastern limit of ice for the month.

The following table shows the southern and eastern limits of the regions within which icebergs or field ice were reported for May during the last thirteen years:

Southern and eastern limits of ice.

Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
	° ′	° ′		° ′	° ′
May, 1883	40 30	47 00	May, 1883	45 40	45 12
May, 1884	41 30	47 30	May, 1884	43 30	44 50
May, 1885	40 50	48 15	May, 1885	42 30	40 10
May, 1886	41 36	51 30	May, 1886	48 55	46 13
May, 1887	39 38	46 00	May, 1887	39 38	46 00
May, 1888	41 00	46 00	May, 1888	41 00	46 00
May, 1889	43 07	55 47	May, 1889	49 46	36 48
May, 1890	40 50	50 28	May, 1890	44 12	36 25
May, 1891	40 49	49 07	May, 1891 *	48 00	45 00
May, 1892	42 14	51 20	May, 1892	45 05	41 14
May, 1893	41 05	55 55	May, 1893	47 02	42 16
May, 1894	40 34	48 35	May, 1894	43 31	43 37
May, 1895	41 00	49 00	May, 1895	47 00	42 00
Mean	41 08	48 47	Mean	45 04	42 45

*On the 7th three small pieces of ice were reported in N. 49° 03′, W. 35° 40′.

TEMPERATURE OF THE AIR.

[*In degrees Fahrenheit.*]

The mean temperature is given for each station in Table II, for voluntary observers, but in Table I, for the regular stations of the Weather Bureau, both the mean temperatures and the departures from the normal are given for the current month.

The *monthly mean temperature* published in Table I, for the regular stations of the Weather Bureau, is the simple mean of all the daily maxima and minima; for voluntary stations a variety of methods of computation is necessarily allowed, as shown by the notes appended to Table II.

The distribution of the monthly mean temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart II; the lines are drawn over the high irregular surface of the Rocky Mountain plateau, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

The extreme mean temperatures were Key West, 79.9; Yuma, 79.2; Eastport, 48.3.

The *regular diurnal period* in temperature is shown by the hourly means given in Table IV for all stations having self-registers.

As compared with the normal for May, the mean temperature for the current month was decidedly in excess from New England and Nova Scotia to the Rocky Mountains. It was deficient in the south Atlantic and Gulf States. The greatest excesses were: White River, 5.6; Sault Ste. Marie, 5.5; Marquette, 5.3; Port Huron, 5.2. The greatest deficits were: Walla Walla, 4.2; Shreveport, 4.1; Springfield, Mo., and Augusta, 3.8; Kittyhawk, 3.7.

Considered by districts, the mean temperatures for the current month show departures from normal temperatures as given in Table I. The greatest positive departure was: Upper Lake, 3.7. The greatest negative departure: South Atlantic, 2.5.

The *years of highest and lowest mean temperature* are shown in Table I of the REVIEW for May, 1894. The mean temperature for May, 1895, was the highest on record at Sault Ste. Marie, 52.5; Topeka, 66.6; Concordia, 66.2; Wichita, 67.4; Tampa, 77.2. It was the lowest on record at Columbia, S. C., 69.8; Augusta, 69.0; Shreveport, 70.2; Palestine, 69.4.

The *maximum and minimum temperatures* of the current month are given in Table I. The highest maxima were Yuma, 109, 8th; Tucson, 101, 7th. The lowest maxima were Eureka, 68, 11th; Port Angeles, 75, 16th. The highest minimum was Key West, 67, 3d. The lowest minimum was Havre, 22, 11th.

The *years of highest maximum and lowest minimum temperatures* are given in the last four columns of Table I of the current REVIEW. During the present month the maximum temperatures were the highest on record at most of the stations in the eastern and central parts of the United States and also at some places on the Pacific coast. The following are the highest: Concordia, 100; Dodge City, 99; Raleigh and Marquette, 98; Point Reyes Light, 82. The minimum temperatures were the lowest on record at Springfield, Ill., 34; Louisville, 36; Parkersburg, 32.

The *accumulated monthly departures* from normal temperatures since January 1 to the end of the current month are given in the second column of the following table, and the average departures are given in the third column, for comparison with the departures of current conditions of vegetation from the normal conditions.

Districts.	Accumulated departures.		Districts.	Accumulated departures.	
	Total.	Average.		Total.	Average.
	°	°		°	°
North Dakota	+11.7	+2.3	New England	−3.2	−0.6
Missouri Valley	+3.8	+0.8	Middle Atlantic	−12.1	−2.4
Northern plateau	+9.3	+1.9	South Atlantic	−17.2	−3.4
North Pacific	+0.4	+0.1	Florida Peninsula	−11.2	−2.2
			East Gulf	−18.3	−3.7
			West Gulf	−15.6	−3.1
			Ohio Valley and Tenn.	−16.2	−3.2
			Lower Lakes	−8.9	−1.8
			Upper Lakes	−1.6	−0.3
			Upper Mississippi	−4.2	−0.8
			Northern slope	−1.5	−0.3
			Middle slope	−2.1	−0.4
			Southern slope (Abilene)	−14.4	−2.9
			Southern plateau	−2.8	−0.6
			Middle plateau	−5.0	−1.0
			Middle Pacific	−2.2	−0.4
			South Pacific	−1.5	−0.3

The *greatest daily range of temperature and the extreme monthly range* are given for each of the regular Weather Bureau stations in Table I, which also gives data from which may be computed the extreme monthly ranges for each station. The largest values among the greatest daily ranges were: North Platte, 48; Pueblo, 47; Olympia, 46; Milwaukee and Havre, 45. The smallest values were: Port Eads, 11; Galveston, 14; Hatteras, 16; Corpus Christi, 17; Key West and Charleston, 18; Pensacola, 19; Jupiter, 20. Among the extreme monthly ranges the largest values were: Marquette

and Huron, 70; Alpena and Pierre, 68; North Platte, Port Huron, and Concordia, 65. The smallest values were: Key West and Galveston, 21; Port Eads, 22; Eureka, 26; Corpus Christi, 27.

The *limit of freezing weather* is shown on Chart VI by the isotherm of minimum 32° and the limit of frost by the isotherm of minimum 40°.

FROST.

Reports of damage by frost were received from the following States on the respective dates:

10th.—Idaho.
11th.—North Dakota and Iowa.
12th.—Iowa, Missouri, Minnesota, Nebraska, and Ohio.
13th.—New York, Ohio, Pennsylvania, Minnesota, Missouri, Virginia, West Virginia, Tennessee, and Kentucky.
14th.—Wisconsin, Massachusetts, Illinois, Iowa, Connecticut, Vermont, and Alabama.
15th.—Michigan.
16th.—Michigan and Missouri.
17th.—New York, New Jersey, Ohio, Kansas, and Connecticut.
18th.—Alabama.
19th.—Pennsylvania and South Dakota.
20th.—South Dakota, Pennsylvania, and New York.
21st.—Michigan, South Dakota, Minnesota, Iowa, and New York.
22d.—Alabama and New York.

The frosts of the 13th, 14th, 19th, 20th, and 21st in Pennsylvania and western New York are said to have been nearly as severe as the great freeze of the 4th and 5th of June, 1859. The grape crop was severely injured.

Special reports forwarded by the Weather Bureau observer at Erie state that, by the frosts of the 12th and 20th in northwestern Pennsylvania, grapes, early apples, pears, cherries, early roses, strawberries, corn, and tomatoes, so far as they were above ground, were pretty generally killed. From Sunday night (May 12) to Tuesday night (May 21) the thermometer at nighttime ranged from 21° to 22°, and was nowhere above 24°; in the daytime the range was from 44° to 50°. The previous warm or hot spell had brought vegetation forward remarkably; the grape shoots that are now all gone were 6 and 10 inches long.

HOT WINDS.

At Concordia, Kans., the maximum temperature of the month, 100° on the 8th, was accompanied by a very dry atmosphere, withering vegetation, especially corn. On the 9th a very hot, dry, southwest wind backing to southerly was also very injurious, especially to fruit.

MOISTURE.

The *quantity of moisture* in the atmosphere at any time may be expressed by means of the weight contained in a cubic foot of air, or by the tension or pressure of the vapor, or by the temperature of the dew-point. The mean dew-points for each station of the Weather Bureau, as deduced from observations made at 8 a. m. and 8 p. m., daily, are given in Table I.

The *rate of evaporation* from a special surface of water on muslin at any moment determines the *temperature of the wet-bulb thermometer*. An evaporometer may be made to record the quantity of water evaporated from a similar surface during any interval of time. This, therefore, would sum up or integrate the effect of those influences that determine the temperature as given by the wet bulb; from this evaporation the *average humidity of the air* during any given interval of time may be deduced.

The *sensible temperature* experienced by the human body and attributed to the atmosphere depends not merely upon the temperature of the air, but equally upon the dryness and the wind, and is apparently the same as the temperature of the wet-bulb thermometer as obtained by the whirling apparatus used in the shaded shelter. The temperature of the wet-bulb thermometer and its depression below the dry bulb are the fundamental data for all investigations into the relation between human physiology and the atmosphere. In order to present a monthly summary of the atmospheric conditions from a hygienic and physiological point of view, Table VIII has been prepared, showing the maximum, minimum, and mean readings of the wet-bulb thermometer at 8 a. m. and 8 p. m., seventy-fifth meridian time.

PRECIPITATION.

[*In inches and hundredths.*]

The *distribution of precipitation* for the month of May, 1895, as determined by reports from about 2,500 stations, is exhibited on Chart III. The numerical details are given in Tables I, II, and III.

The precipitation for the current month was heaviest, 6 to 13 inches, on the coasts of Washington and Oregon, and 5 to 10 inches in eastern Texas, but least, namely, zero, in portions of Arizona, Idaho, and southern California.

The *diurnal variation* is shown by Table XII, which gives the total precipitation for each hour of seventy-fifth meridian time, as deduced from self-registering gauges kept at about 43 regular stations of the Weather Bureau; of these 37 are float gauges and 6 are weighing gauges.

The *normal precipitation* for each month is shown in the Atlas of Bulletin C, entitled "Rainfall and Snow of the United States, compiled to the end of 1891, with annual, seasonal, monthly, and other charts."

The *current departures* from the normal precipitation are given in Table I, which shows that precipitation was in excess in the west Gulf States and on the coasts of Washington and Oregon. It was deficient in the eastern Rocky Mountain slope. The large excesses were: Port Eads, 7.5; Neah Bay, 6.3; Fort Canby, 5.5; Astoria, 5.3. The large deficits were: Omaha, 3.4; Meridian, 3.8; Concordia, 3.2; Indianapolis, 3.1.

The *average departure* for each district is also given in Table I. By dividing these by the respective normals the following corresponding percentages are obtained (precipitation is in excess when the percentages of the normal exceeds 100):

Above the normal: East Gulf, 128; west Gulf, 131; North Dakota, 126; southern plateau, 444; middle plateau, 113; northern plateau, 121; north Pacific, 216; middle Pacific, 119.

Below the normal: New England, 97; middle Atlantic, 97; south Atlantic, 95; Florida Peninsula, 82; Ohio Valley and Tennessee, 64; Lower Lake, 78; Upper Lake, 97; Upper Mississippi, 69; Missouri Valley, 65; northern slope, 71;